CONTRACT BETWEEN THE CITY OF AUSTIN
AND
TEXAS STATE UNIVERSITY
For
Barton Springs and Austin Blind Salamanders Research Project
MA 6300 NA190000181

This Contract is made by and between the City of Austin ("City"), a home-rule municipality incorporated by the State of Texas, and Texas State University ("Contractor"), having offices at 601 University Drive San Marcos, TX 78666-4684.

SECTION 1. GRANT OF AUTHORITY, SERVICES AND DUTIES

1.1 **Engagement of the Contractor.** Subject to the general supervision and control of the City and subject to the provisions of the Terms and Conditions contained herein, the Contractor is engaged to provide the services set forth in Section 2, Scope of Work.

1.2 **Responsibilities of the Contractor.** The Contractor shall provide all technical and professional expertise, knowledge, management, and other resources required for accomplishing all aspects of the tasks and associated activities identified in the Scope of Work. In the event that the need arises for the Contractor to perform services beyond those stated in the Scope of Work, the Contractor and the City shall negotiate mutually agreeable terms and compensation for completing the additional services.

1.3 **Responsibilities of the City.** The City's Contract Manager will be responsible for exercising general oversight of the Contractor's activities in completing the Scope of Work. Specifically, the Contract Manager will represent the City's interests in resolving day-to-day issues that may arise during the term of this Contract, shall participate regularly in conference calls or meetings for status reporting, shall promptly review any written reports submitted by the Contractor, and shall approve all invoices for payment, as appropriate. The City's Contract Manager shall give the Contractor timely feedback on the acceptability of progress and task reports.

1.4 **Designation of Key Personnel.** The Contractor's Contract Manager for this engagement shall be Joanne Palmer, Phone: (512)245-2151, Email Address: JP57@txstate.edu. The City's Contract Manager for the engagement shall be Josephine Archer, Phone: (512) 974-9735, Email Address: Josephine.archer@austintexas.gov. The City and the Contractor resolve to keep the same key personnel assigned to this engagement throughout its term. In the event that it becomes necessary for the Contractor to replace any key personnel, the replacement will be an individual having equivalent experience and competence in executing projects such as the one described herein. Additionally, the Contractor will promptly notify the City Contract Manager and obtain approval for the replacement. Such approval shall not be unreasonably withheld.

SECTION 2. SCOPE OF WORK

2.1 **Contractor's Obligations.** The Contractor shall fully and timely provide all deliverables described herein and in the Contractor's Offer in strict accordance with the terms, covenants, and conditions of the Contract and all applicable Federal, State, and local laws, rules, and regulations.

2.2 **Tasks.** In order to accomplish the work described herein, the Contractor shall perform each of the tasks detailed in Exhibit A, Scope of Work.

SECTION 3. COMPENSATION

3.1 **Contract Amount.** The Contractor will be paid as indicated herein upon the successful completion of the Scope of Work. In consideration for the services to be performed under this Contract, the Contractor shall be paid an amount not-to-exceed $42,563.00 for all fees and expenses for the initial term and an amount not-to-exceed $42,563.00 for each extension option. This compensation is a Fixed Price Basis.

3.2 **Invoices.**

3.2.1 **Invoices shall contain a unique invoice number, the purchase order or delivery order number and the agreement number if applicable, the Department's Name, and the name of the point of contact for the Department**. Invoices shall be itemized. The Contractor's name and, if applicable, the tax identification number on the invoice must exactly match the information in the Contractor's registration with the City. Unless otherwise instructed in writing, the City may rely on the remittance address specified on the Contractor's invoice. Invoices received without all required information cannot be processed and will be returned to the Contractor. Invoices shall be mailed to the below address:

	City of Austin
Department	Watershed Protection
Attn:	Josephine Archer
Address	PO Box 1088
City, State, Zip Code	Austin, TX 78767
Email Address	WPDinvoices@austintexas.gov

3.3 **Payment.**

3.3.1 All proper invoices received by the City will be paid within thirty (30) calendar days of the City's receipt of the deliverables or of the invoice, whichever is later.

3.3.2 **If payment is not timely made, (per this paragraph), interest shall accrue on the unpaid balance at the lesser of the rate specified in Texas Government Code Section 2251.025 or the maximum lawful rate; except, if payment is not timely made for a reason for which the City may withhold payment hereunder, interest shall not accrue until ten (10) calendar days after the grounds for withholding payment have been resolved.**

3.3.3 The City may withhold or off set the entire payment or part of any payment otherwise due the Contractor to such extent as may be necessary on account of:

3.3.3.1 failure of the Contractor to pay Subcontractors, or for labor, materials or equipment;

3.3.3.2 damage to the property of the City or the City's agents, employees or contractors, which is not covered by insurance required to be provided by the Contractor;

3.3.3.3 failure of the Contractor to submit proper invoices with all required attachments and supporting documentation; or

3.3.3.4 failure of the Contractor to comply with any material provision of the Contract Documents.

3.3.4 Notice is hereby given of Article VIII, Section 1 of the Austin City Charter which prohibits the payment of any money to any person, firm or corporation who is in arrears to the City for taxes, and of §2-8-3 of the Austin City Code concerning the right of the City to offset indebtedness owed the City.

3.3.5 Payment will be made by check unless the parties mutually agree to payment by credit card or electronic transfer of funds. The Contractor agrees that there shall be no additional charges, surcharges, or penalties to the City for payments made by credit card or electronic transfer of funds.

3.4 **Non-Appropriation.** The awarding or continuation of this Contract is dependent upon the availability of funding. The City's payment obligations are payable only and solely from funds Appropriated and available for this Contract. The absence of Appropriated or other lawfully available funds shall render the Contract null and void to the extent funds are not Appropriated or available and any deliverables delivered but unpaid shall be returned to the Contractor. The City shall provide the Contractor written notice of the failure of the City to make an adequate Appropriation for any fiscal year to pay the amounts due under the Contract, or the reduction of any Appropriation to an amount insufficient to permit the City to pay its obligations under the Contract. In the event of non or inadequate appropriation of funds, there will be no penalty nor removal fees charged to the City.

3.5 **Final Payment and Close-Out.**

3.5.1 The making and acceptance of final payment will constitute:

3.5.1.1 a waiver of all claims by the City against the Contractor, except claims (1) which have been previously asserted in writing and not yet settled, (2) arising from defective work appearing after final inspection, (3) arising from failure of the Contractor to comply with the Contract or the terms of any warranty specified herein, (4) arising from the Contractor's continuing obligations under the Contract, including but not limited to indemnity and warranty obligations, or (5) arising under the City's right to audit; and

3.5.1.2 a waiver of all claims by the Contractor against the City other than those previously asserted in writing and not yet settled.

SECTION 4. TERM AND TERMINATION

4.1 **Term of Contract.** The Contract shall commence upon execution, unless otherwise specified, and shall remain in effect for an initial term of twelve (12) months.

4.1.1 The Contract may be extended beyond the initial term for up to one (1) additional twelve (12) month periods at the City's sole option.

4.1.2 Upon expiration of the initial term or any period of extension, the Contractor agrees to hold over under the terms and conditions of this Contract for such a period as is reasonably necessary for the City to re-solicit and/or complete the deliverables due under this Contract (not exceed 120 calendar days unless mutually agreed on in writing).

4.2 **Right To Assurance.** Whenever one party to the Contract in good faith has reason to question the other party's intent to perform, demand may be made to the other party for written assurance of the intent to perform. In the event that no assurance is given within the time specified after demand is made, the demanding party may treat this failure as an anticipatory repudiation of the Contract.

4.3 **Default.** The Contractor shall be in default under the Contract if the Contractor (a) fails to fully, timely and faithfully perform any of its material obligations under the Contract, (b) fails to provide adequate assurance of performance under the "Right to Assurance paragraph herein, (c) becomes insolvent or seeks relief under the bankruptcy laws of the United States or (d) makes a material misrepresentation in Contractor's Offer, or in any report or deliverable required to be submitted by Contractor to the City.

4.4 **Termination For Cause.** In the event of a default by the Contractor, the City shall have the right to terminate the Contract for cause, by written notice effective ten (10) calendar days, unless otherwise specified, after the date of such notice, unless the Contractor, within such ten (10) day period, cures such default, or provides evidence sufficient to prove to the City's reasonable satisfaction that such default does not, in fact, exist. The City may place Contractor on probation for a specified period of time within which the Contractor must correct any non-compliance issues. Probation shall not normally be for a period of more than nine (9) months, however, it may be for a longer period, not to exceed one (1) year depending on the circumstances. If the City determines the Contractor has failed to perform satisfactorily during the probation period, the City may proceed with suspension. In the event of a default by the Contractor, the City may suspend or debar the Contractor in accordance with the "City of Austin Purchasing Office Probation, Suspension and Debarment Rules for Vendors" and remove the Contractor from the City's vendor list for up to five (5) years and any Offer submitted by the Contractor may be disqualified for up to five (5) years. In addition to any other remedy available under law or in equity, the City shall be entitled to recover all actual damages, costs, losses and expenses, incurred by the City as a result of the Contractor's default, including, without limitation, cost of cover, reasonable attorneys' fees, court costs, and prejudgment and post-judgment interest at the maximum lawful rate. All rights and remedies under the Contract are cumulative and are not exclusive of any other right or remedy provided by law.

4.5 **Termination Without Cause.** Either party shall have the right to terminate the Contract, in whole or in part, without cause any time upon thirty (30) calendar days prior written notice. Upon receipt of a notice of termination, the Contractor shall promptly cease all further work pursuant to the Contract, with such exceptions, if any, specified in the notice of termination. The City shall pay the Contractor, to the extent of funds Appropriated or otherwise legally available for such purposes, for all goods delivered and services performed and obligations incurred prior to the date of termination in accordance with the terms hereof.

4.6 **Fraud.** Fraudulent statements by the Contractor on any Offer or in any report or deliverable required to be submitted by the Contractor to the City shall be grounds for the termination of the Contract for cause by the City and may result in legal action.

SECTION 5. OTHER DELIVERABLES

5.1 **Insurance**: The Texas Tort Claims Act (Civil Practice and Remedies Code, Title 5, Chapter 101) provides for remedies against the State for legal proceedings for claimants in these areas. The limits set forth in the Act are as follows:

5.1.1 Property damage: $100,000

5.1.2 Injury to a person: $250,000

5.1.3 Bodily injury or death: $500,000

5.1 **Equal Opportunity.**

5.1.1 **Equal Employment Opportunity.** No Offer submitted to the City shall be considered, nor any Purchase Order issued, or any Contract awarded by the City unless the Offeror has executed and filed with the City Purchasing Office a current Non-Discrimination Certification. Texas State complies with the State of Texas requirements of Non-Discrimination and Non-Retaliation policies.

5.1.2 **Americans With Disabilities Act (ADA) Compliance.** No Contractor, or Contractor's agent, shall engage in any discriminatory practice against individuals with disabilities as defined in the ADA, including but not limited to: employment, accessibility to goods and services, reasonable accommodations, and effective communications.

5.2 **Delays.**

5.2.1 The City may delay scheduled delivery or other due dates by written notice to the Contractor if the City deems it is in its best interest. If such delay causes an increase in the cost of the work under the Contract, the City and the Contractor shall negotiate an equitable adjustment for costs incurred by the Contractor in the Contract price and execute an amendment to the Contract. The Contractor must assert its right to an adjustment within thirty (30) calendar days from the date of receipt of the notice of delay. Failure to agree on any adjusted price shall be handled under the Dispute Resolution process specified herein. However, nothing in this provision shall excuse the Contractor from delaying the delivery as notified.

5.2.2 Neither party shall be liable for any default or delay in the performance of its obligations under this Contract if, while and to the extent such default or delay is caused by acts of God, fire, riots, civil commotion, labor disruptions, sabotage, sovereign conduct, or any other cause beyond the reasonable control of such Party. In the event of default or delay in Contract performance due to any of the foregoing causes, then the time for completion of the services will be extended; provided, however, in such an event, a conference will be held within a reasonable time to establish a mutually agreeable period of time reasonably necessary to overcome the effect of such failure to perform.

5.3 **Ownership And Use Of Deliverables.**

5.3.1 **Patents.** Title to all inventions and discoveries made solely by Contractor inventors resulting from the work shall reside with the Contractor; title to all inventions and discoveries made solely by City inventors resulting from the work shall reside with City; title to all inventions and discoveries made jointly by Contractor and City inventors resulting from the work shall reside jointly with Contractor and City.

5.3.2 **Data and Copyrights.** Title to data (which is defined as including, but not limited to; software, writings, sound recordings, pictorial reproductions, drawings or other graphical representations, reports, blueprints and works of any similar nature, whether or not copyrighted or copyrightable) first produced or composed by Contractor employees in the performance of work under this Agreement shall be the sole and exclusive property of Contractor. Contractor shall have the sole right to determine the disposition of copyrights or other rights resulting from the performance of work; provided that Contractor hereby grants to City a royalty free, perpetual, non-exclusive license to reproduce, modify and use all such data for its own purposes.

5.3.3 **Publication.** Both parties shall be free to publish the results of work under this Agreement. Title to and the right to determine the disposition of any copyrights on publications relating to the performance of the work hereunder shall remain with Contractor, who shall have the sole right to determine the disposition of those copyrights. However, prior to publication, Contractor shall provide to City a thirty (30) day period in which to review proposed publications, identify proprietary or confidential information, and submit comments. Contractor shall not publish or otherwise disclose proprietary or confidential information identified by City and will give full consideration to all comments before publication. Furthermore, upon request of the reviewing party, publication will be deferred for up to thirty (30) additional days for preparation and filing of any patent application which City has the right to file.

5.4 **Rights to Proposal and Contractual Material.** All material submitted by the Contractor to the City shall become property of the City upon receipt. Any portions of such material claimed by the Contractor to be proprietary must be clearly marked as such. Determination of the public nature of the material is subject to the Texas Public Information Act, Chapter 552, Texas Government Code.

5.5 **Publications.** All published material and written reports submitted under the Contract must be originally developed material unless otherwise specifically provided in the Contract. When material not originally developed is included in a report in any form, the source shall be identified.

SECTION 6. WARRANTIES

6.1 **Warranty – Price.**

6.1.1 The Contractor warrants the prices quoted in the Offer are no higher than the Contractor's current prices on orders by others for like deliverables under similar terms of purchase.

6.1.2 The Contractor certifies that the prices in the Offer have been arrived at independently without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such fees with any other firm or with any competitor.

6.1.3 In addition to any other remedy available, the City may deduct from any amounts owed to the Contractor, or otherwise recover, any amounts paid for items in excess of the Contractor's current prices on orders by others for like deliverables under similar terms of purchase.

6.2 **Warranty – Services.** The Contractor warrants and represents that all services to be provided to the City under the Contract will be fully and timely performed with best efforts in a good and workmanlike manner in accordance with generally accepted standards and practices, the terms, conditions, and covenants of the Contract, and all applicable Federal, State and local laws, rules or regulations.

6.2.1 The Contractor may not limit, exclude or disclaim the foregoing warranty or any warranty implied by law, and any attempt to do so shall be without force or effect.

6.2.2 Per Chapter 2260 of the Texas Government Code, If a contract dispute arises that cannot be resolved to the satisfaction of the parties, either party may notify the other party in writing of the dispute. If the parties are unable to satisfactorily resolve the dispute within fourteen (14) days of the written notification, the parties must use the dispute resolution process provided for in Chapter 2260 of the Texas Government Code to attempt to resolve the dispute. The provision shall not apply to any matter with respect to which either party may make a decision within its respective sole discretion. Unless otherwise specified in the Contract, the warranty period shall be at least one year from the acceptance date. If during the warranty period, one or more of the warranties are breached, the Contractor shall promptly upon receipt of demand perform the services again in accordance with above standard at no additional cost to the City. All costs incidental to such additional performance shall be borne by the Contractor. The City shall endeavor to give the Contractor written notice of the breach of warranty within thirty (30) calendar days of discovery of the breach of warranty, but failure to give timely notice shall not impair the City's rights under this section.

SECTION 7. MISCELLANEOUS

7.1 **Place and Condition of Work.** The City shall provide the Contractor access to the sites where the Contractor is to perform the services as required in order for the Contractor to perform the services in a timely and efficient manner in accordance with and subject to the applicable security laws, rules, and regulations. The Contractor acknowledges that it has satisfied itself as to the nature of the City's service requirements and specifications, the location and essential characteristics of the work sites, the quality and quantity of materials, equipment, labor and facilities necessary to perform the services, and any other condition or state of fact which could in any way affect performance of the Contractor's obligations under the Contract. As allowed by the laws of the State of Texas, the Contractor hereby releases and holds the City harmless from and against any liability or claim for damages of any kind or nature if the actual site or service conditions differ from expected conditions.

7.2 **Workforce.**

7.2.1 The Contractor shall employ only orderly and competent workers, skilled in the performance of the services which they will perform under the Contract.

7.2.2 The Contractor, its employees, subcontractors, and subcontractor's employees may not while engaged in participating or responding to a solicitation or while in the course and scope of delivering goods or services under a City of Austin contract or on the City's property:

7.2.2.1 use or possess a firearm, including a concealed handgun that is licensed under state law, except as required by the terms of the Contract; and

7.2.2.2 use or possess alcoholic or other intoxicating beverages, illegal drugs or controlled substances, nor may such workers be intoxicated, or under the influence of alcohol or drugs, on the job.

7.2.3 If the City or the City's representative notifies the Contractor that any worker is incompetent, disorderly or disobedient, has knowingly or repeatedly violated safety regulations, has possessed any firearms, or has possessed or was under the influence of alcohol or drugs on the job, the Contractor shall immediately remove such worker from Contract services, and may not employ such worker again on Contract services without the City's prior written consent.

7.3 **Compliance with Health, Safety, and Environmental Regulations.** The Contractor, its Subcontractors, and their respective employees, shall comply fully with all applicable federal, state, and local health, safety, and environmental laws, ordinances, rules and regulations in the performance of the services, including but not limited to those promulgated by the City and by the Occupational Safety and Health Administration (OSHA). In case of conflict, the most stringent safety requirement shall govern as allowed by the laws of the State of Texas. The Contractor shall indemnify and hold the City harmless from and against all claims, demands, suits, actions, judgments, fines, penalties and liability of every kind arising from the breach of the Contractor's obligations under this paragraph.

7.4 **Significant Event.** The Contractor shall immediately notify the City's Contract Manager of any current or prospective "significant event" on an ongoing basis. All notifications shall be submitted in writing to the Contract Manager. As used in this provision, a "significant event" is any occurrence or anticipated occurrence which might reasonably be expected to have a material effect upon the Contractor's ability to meet its contractual obligations. Significant events may include but not be limited to the following:

7.4.1 disposal of major assets;

7.4.2 any major computer software conversion, enhancement or modification to the operating systems, security systems, and application software, used in the performance of this Contract;

7.4.3 any significant termination or addition of provider contracts;

7.4.4 the Contractor's insolvency or the imposition of, or notice of the intent to impose, a receivership, conservatorship or special regulatory monitoring, or any bankruptcy proceedings, voluntary or involuntary, or reorganization proceedings;

7.4.5 strikes, slow-downs or substantial impairment of the Contractor's facilities or of other facilities used by the Contractor in the performance of this Contract;

7.4.6 reorganization, reduction and/or relocation in key personnel;

7.4.7 known or anticipated sale, merger, or acquisition;

7.4.8 known, planned or anticipated stock sales;

7.4.9 any litigation against the Contractor; or

7.4.10 significant change in market share or product focus.

7.5 **Audits and Records.**

7.5.1 The Contractor agrees that the representatives of the Office of the City Auditor or other authorized representatives of the City shall have access to, and the right to audit, examine, or reproduce, any and all

records of the Contractor related to the performance under this Contract. The Contractor shall retain all such records for a period of three (3) years after final payment on this Contract or until all audit and litigation matters that the City has brought to the attention of the Contractor are resolved, whichever is longer. The Contractor agrees to refund to the City any overpayments disclosed by any such audit.

7.5.2 Records Retention:

7.5.2.1 For purposes of this subsection, a Record means all books, accounts, reports, files, and other data recorded or created by a Contractor in fulfillment of the Contract whether in digital or physical format, except a record specifically relating to the Contactor's internal administration.

7.5.2.2 All Records are the property of the City. The Contractor may not dispose of or destroy a Record without City authorization and shall deliver the Records, in all requested formats and media, along with all finding aids and metadata, to the City at no cost when requested by the City.

7.5.3 The Contractor shall include sections 7.5.1 and 7.5.2 above in all subcontractor agreements entered into in connection with this Contract.

7.6 **Financial Disclosures and Assurances.** The City may request and review financial information as the City requires to determine the credit worthiness of the Contractor, including but not limited to, annual reports, audited financial statements and reports, bank letters of credit or other credit instruments. Failure of the Contractor to comply with this requirement shall be grounds for terminating the Contract.

7.7 **Stop Work Notice.** The City may issue an immediate Stop Work Notice in the event the Contractor is observed performing in a manner that is in violation of Federal, State, or local guidelines, or in a manner that is determined by the City to be unsafe to either life or property. Upon notification, the Contractor will cease all work until notified by the City that the violation or unsafe condition has been corrected.

7.8 **Indemnity.** Contractor and City acknowledge that Contractor is an agency of the State of Texas and City is a political subdivision of the State of Texas. Both are subject to, and comply with, the applicable provisions of the Texas Tort Claims Act, and the remedies authorized therein regarding claims or causes of action that may be asserted by third parties for accident, injury or death. Contractor and City shall each promptly notify the other in writing of any claims or demands that become known against them in relation to or arising out of activities under this Contract. Neither Party shall, by reason of this Contract be obligated to defend, assume the cost of defense, hold harmless, or indemnify the other from any liability to third parties or loss of or damage to property, death, or bodily injury arising out of or connected with the work under this Contract. To the extent allowed by law each party agrees to be solely responsible for the wrongful acts of its own employees, contractors, and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity.

7.9 **Claims.** If any claim, demand, suit, or other action is asserted against the Contractor which arises under or concerns the Contract, or which could have a material adverse affect on the Contractor's ability to perform thereunder, the Contractor shall give written notice thereof to the City within ten (10) calendar days after receipt of notice by the Contractor. Such notice to the City shall state the date of notification of any such claim, demand, suit, or other action; the names and addresses of the claimant(s); the basis thereof; and the name of each person against whom such claim is being asserted. Such notice shall be delivered personally or by mail and shall be sent to the City and to the Austin City Attorney. Personal delivery to the City Attorney shall be to City Hall, 301 West 2nd Street, 4th Floor, Austin, Texas 78701, and mail delivery shall be to P.O. Box 1088, Austin, Texas 78767.

7.10 **Notices.** Unless otherwise specified, all notices, requests, or other communications required or appropriate to be given under the Contract shall be in writing and shall be deemed delivered three (3) business days after postmarked if sent by U.S. Postal Service Certified or Registered Mail, Return Receipt Requested. Notices delivered by other means shall be deemed delivered upon receipt by the addressee. Routine communications may be made by first class mail, telefax, or other commercially accepted means. Notices to the City and the Contractor shall be addressed as follows:

To the City:	To the Contractor:	Contractor with a Copy to
City of Austin, Watershed Protection	Texas State University	Texas State University

ATTN: Nathan Bendik, Env. Scientist Senior	ATTN: Marivel Alvarez, Director, Post-Award Research Support Services	ATTN: Dr Benjamin Schwartz, Principal Investigator Director, Edwards Aquifer Research & Data Center
P O Box 1088	601 University Drive	601 University Drive
Austin, TX 78767	San Marcos, TX 78666-4684	San Marcos, TX 78666-4684
	(512)245-2102	(512)245-7608
	grants@txstate.edu	BS37@txstate.edu

7.11 **Confidentiality.** In order to provide the deliverables to the City, Contractor may require access to certain of the City's and/or its licensors' confidential information (including inventions, employee information, trade secrets, confidential know-how, confidential business information, and other information which the City or its licensors consider confidential) {collectively, "Confidential Information"). Contractor acknowledges and agrees that the Confidential Information is the valuable property of the City and/or its licensors and any unauthorized use, disclosure, dissemination, or other release of the Confidential Information will substantially injure the City and/or its licensors. The Contractor (including its employees, subcontractors, agents, or representatives) agrees that it will maintain the Confidential Information in strict confidence and shall not disclose, disseminate, copy, divulge, recreate, or otherwise use the Confidential Information without the prior written consent of the City or in a manner not expressly permitted under this Contract, unless the Confidential Information is required to be disclosed by law or an order of any court or other governmental authority with proper jurisdiction, provided the Contractor promptly notifies the City before disclosing such information so as to permit the City reasonable time to seek an appropriate protective order. The Contractor agrees to use protective measures no less stringent than the Contractor uses within its own business to protect its own most valuable information, which protective measures shall under all circumstances be at least reasonable measures to ensure the continued confidentiality of the Confidential Information.

Information shall be deemed confidential if so marked in writing or so designated orally or in writing. In case of oral designation, disclosure must be followed by written documentation within thirty (30) days, confirming that the information is confidential information. The Contractor agrees to hold and maintain all confidential information, whether oral or written, in confidence and not disclose to others, not make copies of it, not use it, except as expressly agreed beforehand by the City. This restriction continues for five (5) years from the date of receiving Information, and does not apply to any items of information which: (a) are in the public domain at the time of disclosure; or (b) becomes part of the public domain after disclosure by publication or otherwise, other than in violation of the commitment herein; or (c) was in possession of the Contractor at the time of disclosure by the City and was not acquired or received, directly or indirectly, from the City; or (d) was received by the Contractor after the time of disclosure from the City by a third party who did not require it to be held in confidence and who did not acquire it, directly or indirectly, from the City under an obligation of confidence; or (e) Is subject to disclosure pursuant to the Texas Public Information Act, currently codified under Texas Government Code Chapter 552.

7.12 **No Contingent Fees.** The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure the Contract upon any agreement or understanding for commission, percentage, brokerage, or contingent fee, excepting bona fide employees of bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the City shall have the right, in addition to any other remedy available, to cancel the Contract without liability and to deduct from any amounts owed to the Contractor, or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee.

7.13 **Gratuities.** The City may, by written notice to the Contractor, cancel the Contract without liability if it is determined by the City that gratuities were offered or given by the Contractor or any agent or representative of the Contractor to any officer or employee of the City with a view toward securing the Contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performing of such contract. In the event the Contract is canceled by the City pursuant to this provision, the City shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by the Contractor in providing such gratuities.

7.14 **Prohibition Against Personal Interest in Contracts.** No officer, employee, independent consultant, or elected official of the City who is involved in the development, evaluation, or decision-making process of the

performance of any solicitation shall have a financial interest, direct or indirect, in the Contract resulting from that solicitation. Any willful violation of this section shall constitute impropriety in office, and any officer or employee guilty thereof shall be subject to disciplinary action up to and including dismissal. Any violation of this provision, with the knowledge, expressed or implied, of the Contractor shall render the Contract voidable by the City.

7.15 **Independent Contractor.** The Contract shall not be construed as creating an employer/employee relationship, a partnership, or a joint venture. The Contractor's services shall be those of an independent contractor. The Contractor agrees and understands that the Contract does not grant any rights or privileges established for employees of the City.

7.16 **Assignment-Delegation.** The Contract shall be binding upon and enure to the benefit of the City and the Contractor and their respective successors and assigns, provided however, that no right or interest in the Contract shall be assigned and no obligation shall be delegated by the Contractor without the prior written consent of the City. Any attempted assignment or delegation by the Contractor shall be void unless made in conformity with this paragraph. The Contract is not intended to confer rights or benefits on any person, firm or entity not a party hereto; it being the intention of the parties that there be no third party beneficiaries to the Contract.

7.17 **Waiver.** No claim or right arising out of a breach of the Contract can be discharged in whole or in part by a waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by the aggrieved party. No waiver by either the Contractor or the City of any one or more events of default by the other party shall operate as, or be construed to be, a permanent waiver of any rights or obligations under the Contract, or an express or implied acceptance of any other existing or future default or defaults, whether of a similar or different character.

7.18 **Modifications.** The Contract can be modified or amended only in writing signed by both parties. No pre-printed or similar terms on any Contractor invoice, order or other document shall have any force or effect to change the terms, covenants, and conditions of the Contract.

7.19 **Interpretation.** The Contract is intended by the parties as a final, complete and exclusive statement of the terms of their agreement. No course of prior dealing between the parties or course of performance or usage of the trade shall be relevant to supplement or explain any term used in the Contract. Although the Contract may have been substantially drafted by one party, it is the intent of the parties that all provisions be construed in a manner to be fair to both parties, reading no provisions more strictly against one party or the other. Whenever a term defined by the Uniform Commercial Code, as enacted by the State of Texas, is used in the Contract, the UCC definition shall control, unless otherwise defined in the Contract.

7.20 **Dispute Resolution.**

7.20.1 If a dispute arises out of or relates to the Contract, or the breach thereof, the parties agree to negotiate prior to prosecuting a suit for damages. However, this section does not prohibit the filing of a lawsuit to toll the running of a statute of limitations or to seek injunctive relief. If a contract dispute arises that cannot be resolved to the satisfaction of the parties, either party may notify the other party in writing of the dispute. If the parties are unable to satisfactorily resolve the dispute within fourteen (14) days of the written notification, the parties must use the dispute resolution process provided for in Chapter 2260 of the Texas Government Code to attempt to resolve the dispute.

7.20.2 If the efforts to resolve the dispute through negotiation fail, or the parties waive the negotiation process, the parties may select, within thirty (30) calendar days, a mediator trained in mediation skills to assist with resolution of the dispute. Should they choose this option, the City and the Contractor agree to act in good faith in the selection of the mediator and to give consideration to qualified individuals nominated to act as mediator. Nothing in the Contract prevents the parties from relying on the skills of a person who is trained in the subject matter of the dispute or a contract interpretation expert. If the parties fail to agree on a mediator within thirty (30) calendar days of initiation of the mediation process, the mediator shall be selected by the Travis County Dispute Resolution Center (DRC). The parties agree to participate in non-binding mediation in good faith for up to thirty (30) calendar days from the date of the first mediation session. The City and the Contractor will share the mediator's fees equally and the parties will bear their own costs of participation such as fees for any consultants or attorneys they may utilize to represent them or otherwise assist them in the non-binding mediation.

7.21 **Subcontractors.**

7.21.1 Work performed for the Contractor by a Subcontractor shall be pursuant to a written contract between the Contractor and Subcontractor. The terms of the subcontract may not conflict with the terms of the Contract, and shall contain provisions that:

7.21.1.1 require that all deliverables to be provided by the Subcontractor be provided in strict accordance with the provisions, specifications and terms of the Contract.

7.21.1.2 prohibit the Subcontractor from further subcontracting any portion of the Contract without the prior written consent of the City and the Contractor. The City may require, as a condition to such further subcontracting, that the Subcontractor post a payment bond in form, substance and amount acceptable to the City;

7.21.1.3 require Subcontractors to submit all invoices and applications for payments, including any claims for additional payments, damages or otherwise, to the Contractor in sufficient time to enable the Contractor to include same with its invoice or application for payment to the City in accordance with the terms of the Contract;

7.21.1.4 require that all Subcontractors obtain and maintain, throughout the term of their contract, insurance in the type and amounts specified for the Contractor, with the City being a named insured as its interest shall appear; and

7.21.1.5 require that the Subcontractor indemnify and hold the City harmless to the same extent as the Contractor is required to indemnify the City.

7.21.2 The Contractor shall be fully responsible to the City for all acts and omissions of the Subcontractors just as the Contractor is responsible for the Contractor's own acts and omissions. Nothing in the Contract shall create for the benefit of any such Subcontractor any contractual relationship between the City and any such Subcontractor, nor shall it create any obligation on the part of the City to pay or to see to the payment of any moneys due any such Subcontractor except as may otherwise be required by law.

7.21.3 The Contractor shall pay each Subcontractor its appropriate share of payments made to the Contractor not later than ten (10) calendar days after receipt of payment from the City.

7.21.4 For the purposes of this Contract, Subcontractors shall not include entities or people performing work under a Cooperative Research and Development Agreement with Contractor, including agreements made pursuant to the Federal Transfer Act.

7.22 **Jurisdiction And Venue.** The Contract is made under and shall be governed by the laws of the State of Texas. All issues arising from this Contract shall be resolved in the courts of Travis County, Texas and the parties agree to submit to the exclusive personal jurisdiction of such courts. The foregoing, however, shall not be construed or interpreted to limit or restrict the right or ability of either party to seek and secure injunctive relief from any competent authority as contemplated herein.

7.23 **Invalidity.** The invalidity, illegality, or unenforceability of any provision of the Contract shall in no way affect the validity or enforceability of any other portion or provision of the Contract. Any void provision shall be deemed severed from the Contract and the balance of the Contract shall be construed and enforced as if the Contract did not contain the particular portion or provision held to be void. The parties further agree to reform the Contract to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this section shall not prevent this entire Contract from being void should a provision which is the essence of the Contract be determined to be void.

7.24 **Holidays.** The following holidays are observed by the City:

Holiday	Date Observed
New Year’s Day	January 1
Martin Luther King, Jr.’s Birthday	Third Monday in January

President's Day	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4
Labor Day	First Monday in September
Veteran's Day	November 11
Thanksgiving Day	Fourth Thursday in November
Friday after Thanksgiving	Friday after Thanksgiving
Christmas Eve	December 24
Christmas Day	December 25

If a Legal Holiday falls on Saturday, it will be observed on the preceding Friday. If a Legal Holiday falls on Sunday, it will be observed on the following Monday.

7.25 **Survivability of Obligations.** All provisions of the Contract that impose continuing obligations on the parties, including but not limited to the warranty, indemnity, and confidentiality obligations of the parties, shall survive the expiration or termination of the Contract.

7.26 **Non-Suspension or Debarment Certification.** The City of Austin is prohibited from contracting with or making prime or sub-awards to parties that are suspended or debarred or whose principals are suspended or debarred from Federal, State, or City of Austin Contracts. By accepting a Contract with the City, the Vendor certifies that its firm and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the General Services Administration List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.

7.27 **Incorporation of Documents. Section 0100, Standard Purchase Definitions**, is hereby incorporated into this Contract by reference, with the same force and effect as if they were incorporated in full text. The full text versions of this Section are available, on the Internet at the following online address:
https://assets.austintexas.gov/purchase/downloads/standard_purchase_definitions.pdf

In witness whereof, the parties have caused duly authorized representatives to execute this Contract on the dates set forth below.

TEXAS STATE UNIVERSITY

By: _____
Signature

Name: Walter E. Horton, Jr., Ph.D.
Printed Name

Title: Chief Research Officer

Date: 7-24-19

CITY OF AUSTIN

By: _____
Signature

Name: Brenita Selement
Printed Name

Title: Procurement Specialist II

Date: 7-31-19

Reviewed and Approved to Sign:
Joanne Palmer, OTC

List of Exhibits

Exhibit A	Scope of Work
Exhibit B	Non-Discrimination Certification, Section 0800
Exhibit C	Non-Suspension or Debarment Certification, Section 0805
Exhibit D	Texas State University (Contractor) Proposal Dated 01/01/2019

Exhibit A

Scope of Work

PROFESSIONAL SERVICES AGREEMENT
BETWEEN THE CITY OF AUSTIN AND TEXAS STATE UNIVERSITY

Description: Food Webs and Trophic Structure of the Groundwater Ecosystem Supporting Barton Springs and Austin Blind Salamanders

1.0 **Purpose**

The City of Austin, Watershed Protection Department (hereinafter referred to as the "City"), intends to enter into a Professional Services Agreement with Texas State University (hereinafter referred to as the "Contractor"), working specifically with Dr. Benjamin Schwartz, Ph.D., Department of Biology at Texas State University. The purpose of this contract is to characterize the food webs and trophic structure of the groundwater ecosystem supporting Barton Springs and Austin Blind Salamanders in the Barton Springs segment of the Edwards Aquifer (BSEA).

The primary objective of the contract is to perform an initial characterization of the functional and trophic ecology of the stygobitic (groundwater-adapted) invertebrate community that, directly and/or indirectly, supports populations of the Federally Endangered Austin Blind Salamander (*Eurycea waterlooensis*) and Barton Springs Salamander (*Eurycea sosorum)* in the BSEA. Effective management of endangered species in this region, which is experiencing increasing pressures on groundwater resources, requires a detailed understanding of not only species habitat, but also the ecosystem in which they live.

2.0 **Background**

This study was proposed to the Barton Springs Salamander Conservation Fund (BSSCF) and the proposal was accepted by a committee of Watershed Protection Department (WPD) staff and the U.S. Fish and Wildlife Service (USFWS). The fund was established in accordance with the provisions set forth in the Barton Springs Pool Habitat Conservation Plan (HCP) and incidental take permit (ITP) TE-839031-2, issued under the authority of 16 USC 1539(a)(l)(B) and regulation 50 CFR §§ 13 & 17.

The BSSCF was established as a conservation measure in the City of Austin's HCP and associated ITP from the USFWS that allows for the operation and management of Barton Springs Pool as a recreational facility. The objective of the BSSCF is to support educational, scientific, or management projects that promote the conservation of endangered Barton Springs and Austin Blind salamanders, and the groundwater ecosystem where they exist. Each year, a portion of the proceeds from entrance fees to Barton Springs Pool is allocated to the BSSCF.

In accordance with the HCP and ITP, the use of this fund is restricted to the study of salamander biology, captive breeding, refugium development, reintroduction, watershed related research, improved cleaning techniques for natural water bodies, education and/or land acquisition. The attached proposal addresses this requirement by characterizing the aquifer food web function and structure, including microbial and invertebrate functional levels, which provides information needed to support salamander habitat conservation and

management.

3.0 **Tasks/Requirements**

3.1 **Contractor Responsibilities**

3.1.1 Identify and sample up to 30 sampling sites in wells, springs, recharge sites, and cave streams across the confined, transition, and recharge zones of the BSEA, including outlets at Barton Springs.

3.1.2 At each site, collect samples of water, microbes, particulate and dissolved nutrients, and groundwater organisms to help characterize food sources that support the BSEA ecosystem.

3.1.2.1 Collect invertebrates using methods such as drift nets, poly-cotton lures, mop heads, bottle traps, and/or direct collection, depending on site characteristics, and preserve and taxonomically identify them.

3.1.2.2 Collect salamander tissue from preserved museum specimens and from tail tips of individuals in the wild (the latter with the assistance and under the direction of the City of Austin at COA owned sites).

3.1.2.3 Collect one or more water samples at each site. Depending on the site, coarse and/or fine particulate organic matter (POM) will also be collected for nutrient composition and stable isotope analyses.

3.1.2.4 Collect microbial biomass from wells by filtering pumped or artesian water.

3.1.2.5 Collect fine or coarse particulate matter (POM) on filters for analysis of C, N, and S stable isotopes

3.1.3 Generate stable isotope data (δ^{13}C (Carbon), δ^{15}N (Nitrogen), δ^{34}S (Sulfur)) from invertebrate, salamander, and POM samples.

3.1.4 From the water samples, obtain data for δ^{2}D (Deuterium) and δ^{18}O (Oxygen) stable isotope analysis, identify major dissolved ions, and calculate dissolved and/or total nutrient concentrations (C, N, & P). Measure concentrations of dissolved H_2S (at the time of sampling) and sulfate (via Ion Chromatography in the lab) in water samples. Analyze POM for nutrient composition and stable isotope analyses where applicable.

3.1.5 From microbial samples, extract nucleic acids and sequence 16S rRNA genes by using Illumina MiSeq sequencing technologies. Obtain functional microbial diversity and potentially uncover environmental DNA information from invertebrates, sequence metagenomes on an Illumina HiSeq to obtain at least 20 million sequences per sample. Annotate metagenomes to classify metabolic potential from the samples. Focus on C, N, and S metabolism to understand the differences between heterotrophic and chemolithoautotrophic microbial activities in the aquifer. Identify key metabolic pathways, relative abundances of genes for specific pathways, and key microbial groups who are capable of specific functions.

3.1.6 Characterize the aquifer ecology and ecosystem function in the BSEA. Determine Bayesian probabilities of food sources in basal food web resources for invertebrates and salamanders. δ^{13}C, δ^{15}N, and δ^{34}S end-members will be determined via collection and analysis of POM (which will include the microbial contribution to the food web) at all sampling sites. Measure δ^{34}S in some end-member water samples (by precipitation as BaSO4), but not all. At sites with sufficient data, estimate what proportion of a species' food is sourced from terrestrial (recharge zone) inputs vs. chemolithoautotrophic primary production at the boundary between the deep FWSW

zones. Examine the quantifiable ecological niche of species at each site using stable isotope data. Combine isotopic and microbiological data to learn more about metabolic pathways near the saline zone.

3.1.7 Generate annual status reports and a final report upon completion of data collection and analysis. The contractor shall allow City staff the opportunity to make comments on each and address comments. The final report will be accepted once all comments have been addressed.

3.2 **City's Responsibilities**

3.2.1 Assist in sample site identification.

3.2.2 Capture and handle salamanders for tail tip tissue collection.

3.2.3. Assist with sample collection as requested by contractor, pending City staff availability.

4.0 **Deliverables**

Deliverables/ Milestones	Description	Timeline (due/completion date, reference date, or frequency)	Performance Measure/ Acceptance Criteria	Contract Reference/ Section
Site Identification	Identify up to 30 sampling sites and submit to City Contract Manager.	Due by September 15, 2019	City will review & approve sampling sites in writing.	3.1.1
Status Report	Report based on data collected and analyzed.	Due by September 15, 2020	City approval to be given in writing once determined that Contractor has reported on tasks in Section 3.1	3.1.7
Final Report	Report based on project overall, all data collected and analyzed.	Due at the completion of the project	City approval to be given in writing once determined that Contractor has reported on tasks in Section 3.1	3.1.7
50% Payment	The City will pay $39,963.00 (50%) once all sampling sites have been identified and accepted by City staff.	One time	Payment will be made upon receipt of an acceptable invoice.	6.2.1
35% Payment	The City will pay $27,974.10 (35%) upon receipt and acceptance of the first annual status report.	One time	Payment will be made upon receipt of an acceptable invoice.	6.2.2
15% Payment	The City will pay $11,988.90 (15%) upon receipt and acceptance of the final report.	One time	Payment will be made upon receipt of an acceptable invoice.	6.2.3

5.0 Designation of Key Personnel

5.1 Texas State University, Project SPOCs:

Principal Investigator:
Dr. Benjamin Schwartz
Phone: 512-245-7608
Email: BS37@txstate.edu

Authorized Official for Signature:
Walter E. Horton, Jr., Ph.D.
Phone: 512-245-2314
Email: WEH21@txstate.edu

Contract Negotiations:
Joanne Palmer
Phone: 512-245-2151
Email: JP57@txstate.edu

5.2 City of Austin, Project SPOC:

Name: Nathan Bendik, Environmental Scientist Senior, Watershed Protection
Phone: (512) 974-2040
Email: Nathan.Bendik@austintexas.gov

6.0 Pricing and Invoicing

6.1 Contractor shall perform the tasks identified above in section 3.1, also identified in Exhibit A, A Proposal for Research: Barton Springs Salamander Conservation Fund, for a total cost not to exceed $79,926.00 over a two year period. The project will begin upon contract execution and will conclude two years from that date, or upon completion of all deliverables, to be approved in writing by City staff.

6.2 Payment will be made upon receipt of an acceptable invoice, as follows:

6.2.1 The City will pay $39,963.00 (50%) once all sites have been identified and approved by the City.

6.2.2 The City will pay $27,974.10 (35%) upon receipt and acceptance of the first annual status report.

6.2.3 The City will pay the remaining $11,988.90 (15%) upon receipt and acceptance of the final report.

EXHIBIT B
City of Austin, Texas
NON-DISCRIMINATION AND NON-RETALIATION CERTIFICATION

City of Austin, Texas

Equal Employment/Fair Housing Office

To: City of Austin, Texas,

I hereby certify that Texas State complies with the State of Texas requirements of Non-Discrimination and Non-Retaliation policies as required by the City of Austin:

(1) Not to engage in any discriminatory employment practice defined in this chapter.

(2) To take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without discrimination being practiced against them as defined in this chapter, including affirmative action relative to employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rate of pay or other forms of compensation, and selection for training or any other terms, conditions or privileges of employment.

(3) To post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Equal Employment/Fair Housing Office setting forth the provisions of this chapter.

(4) To state in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will receive consideration for employment without regard to race, creed, color, religion, national origin, sexual orientation, gender identity, disability, sex or age.

(5) To obtain a written statement from any labor union or labor organization furnishing labor or service to Contractors in which said union or organization has agreed not to engage in any discriminatory employment practices as defined in this chapter and to take affirmative action to implement policies and provisions of this chapter.

(6) To cooperate fully with City and the Equal Employment/Fair Housing Office in connection with any investigation or conciliation effort of the Equal Employment/Fair Housing Office to ensure that the purpose of the provisions against discriminatory employment practices are being carried out.

(7) To require of all subcontractors having 15 or more employees who hold any subcontract providing for the expenditure of $2,000 or more in connection with any contract with City funding shall be subject to the requirements of Texas State's discriminatory employment practice.

City of Austin
Minimum Standard Non-Discrimination and Non-Retaliation in Employment Policy

As an Equal Employment Opportunity (EEO) employer, the Contractor will conduct its personnel activities in accordance with established federal, state and local EEO laws and regulations.

The Contractor will not discriminate against any applicant or employee based on race, creed, color, national origin, sex, age, religion, veteran status, gender identity, disability, or sexual orientation. This policy covers all aspects of employment, including hiring, placement, upgrading, transfer, demotion, recruitment, recruitment advertising, selection for training and apprenticeship, rates of pay or other forms of compensation, and layoff or termination.

Texas State agrees to abide by the University Policy & Procedures regarding non-discrimination and non-retaliation.

UPON CONTRACT AWARD, THE CONTRACTOR SHALL PROVIDE THE CITY A COPY OF THE CONTRACTOR'S NON-DISCRIMINATION AND NON-RETALIATION POLICIES. Texas States' non-discrimination policy is found at: https://policies.txstate.edu/university-policies/04-04-46.html and https://policies.txstate.edu/university-policies/04-04-41.html.

Dated this 24 day of July, 2019

CONTRACTOR Texas State University

Authorized Signature

Walter E. Horton, Jr. PH D.

Title Chief Research Officer

Reviewed and Approved to Sign
Joanne Palmer, OTC

EXHIBIT C
City of Austin, Texas
Section 0805
NON-SUSPENSION OR DEBARMENT CERTIFICATION

The City of Austin is prohibited from contracting with or making prime or sub-awards to parties that are suspended or debarred or whose principals are suspended or debarred from Federal, State, or City of Austin Contracts. Covered transactions include procurement contracts for goods or services equal to or in excess of $25,000.00 and all non-procurement transactions. This certification is required for all Vendors on all City of Austin Contracts to be awarded and all contract extensions with values equal to or in excess of $25,000.00 or more and all non-procurement transactions.

The Offeror hereby certifies that its firm and its principals are not currently suspended or debarred from bidding on any Federal, State, or City of Austin Contracts.

Contractor's Name: Texas State University

Signature of Officer or Authorized Representative:  Date: 7/24/19

Printed Name: Walter E. Horton, Jr., Ph.D.

Title: Chief Research Officer

Reviewed and Approved to Sign
Joanne Palmer, OTC

Exhibit D

January 30, 2019

A Proposal for Research: Barton Springs Salamander Conservation Fund

'Food Webs and Trophic Structure of the Groundwater Ecosystem Supporting Barton Springs and Austin Blind Salamanders'

Submitted by:

Benjamin Schwartz, PhD: Texas State University Biology Dept. and

Edwards Aquifer Research and Data Center

bs37@txstate.edu

Co-PIs:

Weston Nowlin, PhD: Texas State University

Annette Engel, PhD: University of Tennessee

Benjamin Hutchins, PhD: Texas State University

Audrey Paterson: University of Tennessee

Victor Castillo, III: Texas State University

Ashley Cottrell: Texas State University

Food Webs and Trophic Structure of the Groundwater Ecosystem Supporting Barton Springs and Austin Blind Salamanders

Project Goal: The goal of this project is to characterize the food webs and trophic structure of the groundwater ecosystem supporting Barton Springs and Austin Blind Salamanders in the Barton Springs segment of the Edwards Aquifer (BSEA). This work will directly address portions of the following stated RFP Project Goals – 'Salamander Biology, and Watershed Related Research.'

Project Objectives: The primary objective of the proposed work is to perform an initial characterization of the functional and trophic ecology of the stygobitic (groundwater-adapted) invertebrate community that, directly and/or indirectly, supports populations of the Federally Endangered Austin Blind Salamander (*Eurycea waterlooensis*) and Barton Springs Salamander (*Eurycea sosorum)* in the BSEA. Because both species are known to inhabit the aquifer, cave streams, and springs in or near the Barton Springs complex, gaining a more complete understanding of the groundwater community, and how species in it interact, is important for supporting efforts by City of Austin (CoA) staff and watershed managers to implement more effective conservation and refugia activities required in the Habitat Conservation Plan (HCP) (CoA, 2013). Ultimately, effective management of endangered species in this region, which is experiencing increasing pressures on groundwater resources, requires a detailed understanding of not only species habitat, but also the ecosystem in which they live. However, the ecological niches of both salamander species, and how niches may vary across geographic space, is presently unclear.

We propose to characterize the functional and trophic ecology of microorganisms and stygobitic invertebrate communities, directly and/or indirectly, supporting aquifer salamander populations in the BSEA. The current RFP limits the feasibility of a complete characterization of the microbial, invertebrate, and vertebrate ecology in the BSEA, which would require a more lengthy and costly project. But, the RPF does provide for an excellent initial characterization, from microbes to salamanders, of "who is there?" and "who eats who?" Our proposed work will directly contribute to meeting a number of specific objectives detailed in Sections 6.3, 6.5, and elsewhere in the HCP, and that are related to ecosystem characterization and maintaining refugia populations (e.g., HCP sections 6.3.2., 6.5.5, 6.5.6, etc.). Our research will result in the first comprehensive investigation of aquifer ecology and ecosystem function in the BSEA, including an analysis of the importance of terrestrial *vs.* deep aquifer sources of carbon (heterotrophic *vs.* autotrophic).

Scope of Work:

1. Length of Project: The projected start date of the research is June 1, 2019, but may vary depending on contract finalization. Assuming this start date, the proposed work will require 24 months, and will be completed by May 31, 2021. Sampling work in the field will begin immediately, followed by sample processing and analysis, then data analysis and synthesis, and then production of a final report and publication of results (with CoA permission). We anticipate sampling will begin immediately after identification of all sampling locations (which will begin

in April, 2019) and will last for between 12-15 months, depending on what the sampling target is, and whether or not the site may yield different materials during different flow conditions. Depending on the site, post-storm sampling is definitely planned (for example, at Barton Springs), because we know from other sites that this will often result in new and/or uncommon species that are not detected during low-flow conditions.

2. Primary Activities: Up to 30 sites (wells, springs, recharge sites, and cave streams) will be sampled across the confined, transition, and recharge zones of the BSEA. Final site selections will be dependent on access and permissions, but we are working to secure these now. I (Benjamin) have spoken with staff at the BSEACD before submission of the proposal, and more recently, and have confirmed that the District will collaborate with us and provide access to wells they own, and/or to provide contact information for landowners with whom they have existing good relationships.

We plan to monitor several locations in the Barton Springs Complex using drift nets that will be checked frequently. Exactly which locations will be monitored will be determined based on conversations with City of Austin staff, but we anticipate 3-5 sites that include some or all of the following spring openings: Main, Eliza, Sunken Garden, and Upper Barton.

We plan to divide the remaining ~25 sites approximately equally between 1) wells in the recharge zone that have produced groundwater invertebrates in the past (i.e., Spillar Water Quality Well, Zara Headquarters Well, etc.), 2) wells in the deep freshwater confined zone (these may be harder to access and/or sample, but we have accessed some of these in the past, such as the Kyle Transect wells, for geochemical and isotopic samples), 3) wells at or near the fresh-saline water interface, but without dissolved oxygen (BSEACD staff have told us that there are several sites that may be suitable and accessible for these samples, which would be for geochemistry, water and sulfur isotopes, POM, and bacteria sampling only, as sites without DO (and with H2S) do not harbor eukaryotes), 4) drift- and hand-sampling in cave streams in the recharge zone (i.e., Blowing Sink Cave) where cave invertebrates are known to occur, and 5) water and POM samples collected in streams crossing the recharge zone where they enter the aquifer (numerous direct recharge sites along Barton, Williamson, Slaughter, Bear, Little Bear, and Onion Creeks where access is controlled by CoA or BSEACD). Finally, we will coordinate with the BSEACD to collect samples from targeted depths (in the Edwards or Upper Trinity aquifer strata) at their WestBay Multi-Port wells whenever it is possible, though those samples would only be for various analyses of POM and dissolved constituents (not invertebrate sampling). We have done this in the past at one of these wells.

At each site, some or all of the following will be collected/sampled one or more times: water, microbes, particulate and dissolved nutrients, and groundwater organisms. Analyses will be performed at Texas State University, the University of Tennessee, or at appropriate sub-contract labs (see Methods). Resulting data will be used to characterize food sources that support the BSEA ecosystem ($\delta^{13}C$ and $\delta^{15}N$, in particular), and will elucidate the trophic structure of the aquifer and spring ecosystems that support both salamander species.

Prior work by our research group (e.g., Hutchins et al., 2016) has shown that stygobitic diversity in the San Antonio pool of the Edwards Aquifer is supported by a spatially heterogeneous

mixture of heterotrophic and autotrophic microbes. Much of the exceptional stygobitic diversity is supported by chemolithoautotrophic microbial production of organic matter at or near the deep artesian, freshwater-saline water (FWSW) transition zone. Based on findings from our prior work, we expect to find similar communities in the Barton Springs segment, and will use similar tools and methods (e.g., Bayesian analysis of $\delta^{13}C$, $\delta^{15}N$, and $\delta^{34}S$ stable isotope data; Parnell & Jackson, 2013; Parnell & Inger, 2016) to determine proportions and the relative importance of deep-aquifer *vs.* recharge zone nutrient sources.

Knowledge gained from the proposed work will provide a baseline understanding of hydrogeologic, geochemical, and (micro) biological processes supporting a healthy Barton Springs aquifer ecosystem. This information will be useful for prioritizing future research in support of the HCP, and for adaptive management decisions that may impact the health of the ecosystem and, by extension, the health of endangered species that depend on the aquifer. In addition, new information can be used to educate stakeholders and partners that will facilitate more effective implementation of management and recovery objectives and strategies as detailed in the HCP.

3. Planning and Permitting: PIs Schwartz, Nowlin, Hutchins, and Castillo in Texas, and PI Engel and Paterson at the University of Tennessee, all have extensive experience performing research in the Edwards Aquifer. PIs Schwartz and Castillo possess a current Federal permit (TE802211-2) to work with all federally endangered aquifer organisms in the San Marcos/Austin/Barton Springs region, and PIs Schwartz, Nowlin, Castillo, Hutchins, and Cottrell possess a current State permit to sample aquifer organisms and work with endangered species (SPR-0116-011). PI Engel will not collect or handle invertebrates or salamanders for this project.

No intentional take of endangered species is required for the proposed work. However, before sampling in salamander habitat can proceed, and as required by our permit, "all research or management activities shall be reviewed and approved in writing by the Austin ESFO though the submission of a study plan prior to implementation." In addition, all members of the research team will adhere to recommendations provided in "Guidelines for Use of Live Amphibians and Reptiles in Field and Laboratory Research" (ASIH, 2004). Work is under way to amend the Federal permit to include all PIs as co-permittees. PIs Schwartz, Castillo, and Nowlin also possess current IACUC protocols at Texas State University for the care and handling of vertebrates, including salamanders.

4. Access to Sampling Sites: Based on informal conversations with BSEACD and CoA staff, we anticipate that permission will be granted to access sites under the control of these organizations (springs, monitoring wells, and caves). The PIs have prior experience sampling wells within the BSEA and other aquifer segments. Well databases (BSEACD and TWDB) will be used to select a list of potential sites that could be sampled at or along the deep FWSW zone transition, and permissions will be requested and secured for at least some of these sites before sampling activities occur. No formal agreements for private property access have been obtained at this time. Moreover, BSEACD staff have already indicated that they are aware of a number of private sites where access may be possible. These will be first priorities.

5. Reporting and Documentation: Quarterly Progress Reports will be prepared and provided to

CoA for the duration of the project, with an Annual Report submitted in May 2020, and a Final Report submitted in May 2021. Progress reports will include brief information on progress on each of the proposed tasks, any significant findings, and a report on any issues encountered and proposed/implemented actions to address any issues. Annual and Final Reports will be more lengthy and include an introduction, methods, results and discussion, and conclusion sections.

Methodology:

Invertebrate Sampling: All documented salamander sites will be reviewed prior to any water sampling. Invertebrates will be collected using drift nets, poly-cotton lures, mop heads, bottle traps, and/or direct collection, depending on site characteristics. Sampling intervals will depend on the site and type of sampling device (e.g., nets at springs will be checked more frequently than passive bottle traps in monitoring wells). All sample materials will be preserved in ethanol (EtOH) and taken to Texas State University for sorting, ID, and preparation and/or preservation for analysis or archiving. PIs have extensive experience sampling for and collecting groundwater invertebrates in the Edwards Aquifer, and are experienced with taxonomic identification and description of aquifer organisms (e.g., Hutchins et al., 2016).

Regarding preservation of samples in EtOH, it is possible to run a set of lipid corrected and non-corrected samples, but this will require additional funds and effort, and will not provide useful information in the context of nutrient sources and trophic structure. Across the published literature, the effects of EtOH preservation on tissue isotopic ($\delta^{13}C$ and $\delta^{15}N$) values of freshwater organisms is equivocal (e.g., Sarakinos et al. 2002). Our previous isotope modeling efforts in other portions of the Edwards Aquifer (e.g., Hutchins et al. 2016) relied heavily upon EtOH-preserved samples that did not have lipids extracted and we did not see any evidence of preservation issues in our analyses or modeling.

Much of the reported inconsistency in EtOH effects comes from the extraction of lipids from samples by EtOH (Sarakinos et al. 2002; Syväranta et al. 2008). The current practice to examine organism diets and food web structure using stable isotopes is to utilize lipid-extracted $\delta^{13}C$ values (i.e., samples which have had their lipids removed) in dietary and food web studies analyses because: 1) lipids tend to be more isotopically depleted (i.e., have more negative values) than other biomolecules such as protein (Koch 2007), 2) lipid content can be highly variable, and 3) use of samples that have had not had lipids extracted can lead to incorrect data and model interpretation (Post et al. 2007; Logan et al. 2008). In addition, the consensus is that lipid extraction and correction should be performed if lipid content is relatively high (>5% lipid content) or if lipid content is highly variable between samples (Post et al. 2007; Logan et al. 2008). Ultimately, the type of method of sample preservation or if lipids are extracted from samples will vary with the specific ecological questions being posed.

Given that the $\delta^{13}C$ and $\delta^{15}N$ data from samples (invertebrate and salamander tissues) in this proposal will be used for diet reconstruction, the most prudent approach would be to extract lipids from samples prior to analyses. If samples are highly lipid-rich, then the use of EtOH-preserved samples would have the desired effect in that lipids would be extracted from samples. However, subterranean organisms have relatively low total lipid content (<1% lipid content; Hervant et al. 1999; P. Nair, unpubl. data, Texas State University), so it is unlikely that lipid extraction is necessary for samples we will analyze.

Microbiological Sampling, DNA Sequencing, and Microbial Diversity Analyses: Biomass will be collected from wells by allowing artesian water to flow through sterile nylon mesh netting or 0.45-µm Whatman glass fiber filters (autoclaved and precombusted at 500°C), or by using low-flow bladder pumps and passed through 0.2-µm PVDF Sterivex filters. Filters will either be stored on ice for transport to the labs for immediate extraction or filled with 2% CTAB to preserve nucleic acids for later extractions. Sample processing will be done at the University of Tennessee. Nucleic acids will be extracted via methods utilized in PI Engel's lab for previous Edwards Aquifer research focusing on bacterial and archaeal diversity (Gray & Engel, 2013). To obtain targeted diversity information, we will use the DNA to sequence 16S rRNA genes by using Illumina MiSeq sequencing technologies. Resulting sequence reads (potentially up to 1 million sequences per sample) will be analyzed using various software packages previously used to analyze Edwards Aquifer and other aquifer and cave data. To obtain functional microbial diversity and potentially uncover environmental DNA information from invertebrates, we will also sequence metagenomes on an Illumina HiSeq to obtain at least 20 million sequences per sample. Metagenomes will be annotated using various public databases and computational algorithms to classify metabolic potential from the samples. We will initially focus on C, N, and S metabolism to understand the differences between heterotrophic and chemolithoautotrophic microbial activities in the aquifer. PI Engel is skilled in these types of analyses, including from the Edwards Aquifer and other karst ecosystems, and her lab manager (Audrey Paterson) will assist in sample processing and train at least one graduate student in data analysis.

For each of our sample sites, we will collect fine or coarse particulate matter (POM) on filters for analysis of C, N, and S stable isotopes. Interpretation of the metabolism can be done based on the $\delta^{13}C$ and $\delta^{15}N$ (and possibly $\delta^{34}S$) signatures based on known fractionation factors for key physiological pathways. We will also use filters to collect POM (which includes cellular debris) and extract nucleic acids from these filters to obtain gene sequence data (of targeted genes and metagenomes). Interpretation of the genetic data, specifically related to potential metabolic function, will be done by computationally using genetic databases and annotating gene function to our unknown sequence data. Genes for carbon, nitrogen, and other key microbial metabolic pathways are fairly (and reliably) well known to identify key pathways, relative abundances of genes for specific pathways, and key microbial groups who are capable of specific functions.

Water and Nutrient Sampling: Depending on site conditions, one or more water samples will be collected at each site for $\delta^{2}D$ and $\delta^{18}O$ stable isotope analysis, major dissolved ions, and dissolved and/or total nutrient concentrations (C, N, & P). Stable isotopes of water and nutrients will be analyzed in the lab of PIs Schwartz and Nowlin; both have >10 years of experience with these analyses and data interpretation. Depending on the site, coarse and/or fine particulate organic matter (POM) will also be collected for nutrient composition and stable isotope analyses. We will measure concentrations of dissolved H_2S (at the time of sampling) and sulfate (via Ion Chromatography in the lab) in water samples.

We will sample POM at all sites where concentrations and sample volume allow it. At some sites coarse POM (vs fine POM) may not exist, so coarse POM would not be analyzed, but we plan to collect and analyze $\delta^{13}C$ of POM at all sites, unless there is simply too little biomass available to obtain an accurate analysis. For example, at some intervals in BSECD Westbay Wells, collecting enough sample volume may not be possible if POM concentrations are very low (based on our

prior experiences).

Salamander Sampling and Tissue Samples: To perform a complete trophic and nutrient-source analysis, tissue samples from salamanders are required. We will obtain these samples from archived specimens of both listed species, provided they have been properly preserved in EtOH or frozen (Barrow et al., 2008). However, although salamanders will not be explicitly targeted for collection, some methods used for invertebrate sampling may incidentally capture salamanders (in bottle traps and drift nets). In the event that salamanders are captured, the following protocols will be followed: 1) at previously documented sites, a small tail clip will be collected for tissue stable isotope analyses and, if possible, the salamander will be returned to the collection habitat (this may not be possible in some cases such as a flowing artesian well); or 2) at previously undocumented sites, up to 3 voucher specimens will be collected and preserved in EtOH, as required by our permit, and tissue samples collected for analyses of $\delta^{13}C$, $\delta^{15}N$, and $\delta^{34}S$ stable isotopes.

Stable Isotope Analyses: Stable Isotope Mixing Model in R (SIMMR) package (Parnell & Inger, 2016) will be used to determine Bayesian probabilities of food sources in basal food web resources for invertebrates and salamanders. $\delta^{13}C$, $\delta^{15}N$, and $\delta^{34}S$ end-members will be determined via collection and analysis of POM (which will include the microbial contribution to the food web) at all sampling sites. We will measure $\delta^{34}S$ in some end-member water samples (by precipitation as BaSO4), but do not propose to do so for all water samples due to the cost. Results will provide a detailed understanding of how the aquifer food web and ecosystem functions. For example, at sites with sufficient data, we will estimate what proportion of a species' food is sourced from terrestrial (recharge zone) inputs *vs.* chemolithoautotrophic primary production at the boundary between the deep FWSW zones. Trophic fractionation of $\delta^{13}C$ is low, allowing food sources with distinct carbon isotope compositions to be traced through food webs (Peterson & Fry, 1987). Conversely, $\delta^{15}N$ exhibits predictable trophic fractionation, although the magnitude of fractionation depends on nitrogen sources and animal physiology (Caut et al., 2009). We will also examine the quantifiable ecological niche of species at each site using stable isotope data in the nicheROVER package in R (Swanson et al., 2015). This package uses a probabilistic method to calculate niche region and estimate pairwise proportional niche overlap among species at a site using two or more sets of isotopic data (i.e., $\delta^{13}C$, $\delta^{15}N$, & $\delta^{34}S$) in a Bayesian inference framework.

Sulfur isotopes are proposed for use as a third end-member in the food resources part of the project. Because $\delta^{34}S$ has little fractionation as it moves through the invertebrate food chain, it may be used in a way similar to $\delta^{13}C$. Our working hypotheses is that $\delta^{34}S$ from the recharge and saline zones will have different signatures, and can then be useful in the SIMMR mixing model. We will combine isotopic and microbiological data to learn more about metabolic pathways near the saline zone.

Expected Project Outcomes (protecting the species populations and increasing scientific knowledge about their biology): Expected results and outcomes from the proposed research are:
1) The first characterization of the aquifer ecology and ecosystem function in the BSEA; and
2) Data and information that can be used to support the HCP adaptive management process, including maintaining or altering existing strategies and goals for optimized preservation of

endangered species and their habitats.

Research/Management Implications: Although basic habitat and environmental requirements (e.g., dissolved oxygen tolerances) are known for salamanders living in and around Barton Springs, almost nothing is known about the larger-scale ecological system and groundwater food web that is required to maintain healthy populations. This work will characterize the aquifer food web function and structure, including microbial and invertebrate functional levels, which provides information needed to support salamander habitat conservation and management.

Dissemination/Community Involvement: The broader community is generally fascinated about aquifer animals when they learn about them. At the Edwards Aquifer Research and Data Center (EARDC), through our annual summer Aquatic Science Adventure Camps, and Field Days throughout the year, we connect with children and people of all ages and communicate the importance of clean groundwater for human health and for the health of the groundwater ecosystem. People find it easier to connect with and care about a natural resource if they know something about it. This is always true with respect to 'alien creatures' that live in our aquifers. Information resulting from this research can be incorporated into a variety of education and outreach activities at EARDC, as well as in BSEACD and CoA education and outreach activities. EARDC actively cooperates with education and outreach staff in both organizations.

Additionally, the findings of this report can be used by CoA staff to support and promote implementation of management strategies that maximize habitat conservation.

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Supporting Information:

Project Participants and Relevant Expertise:

Benjamin Schwartz, PhD, (PI) Texas State University Department of Biology, and Edwards Aquifer Research and Data Center. Schwartz will coordinate and lead the project and participate in: water, microbial, and nutrient sampling, invertebrate collection and identification, sample analyses, data analysis, report writing, and supervising students at TX State. Schwartz will also be responsible for submission of quarterly, annual and final reports.
Schwartz is a karst scientist with >10 years of experience working in the Edwards, Trinity, and Edwards Plateau Aquifer systems, and has expertise in hydrogeology, geochemistry, groundwater invertebrate biology and taxonomy, and stable isotope systems.

Weston Nowlin, PhD, (Co-PI) Texas State University Department of Biology. Nowlin will participate in: report writing, sampling, nutrient data analysis, stable isotope data analysis, food web interpretation, and supervising students at TX State.
Nowlin has >10 years of experience as a community and ecosystem ecologist, working on springs and groundwater systems in the Edwards Plateau region, and has expertise in nutrient cycling, food web ecology, and stable isotopes.

Annette Engel, PhD, (Co-PI) The University of Tennessee Knoxville (UTK), Department of Earth and Planetary Sciences. Engel will lead analysis of microbiological samples, and interpretation of resulting molecular data. Engel will participate in: report writing, food web interpretation, and supervising students at UTK.
Engel has >20 years of experience in karst aquifer biogeochemistry and microbiology (especially in the Edwards Aquifer), and has extensive experience with advanced methods for molecular analysis of autotrophic microbes in aquifer environments.

Benjamin Hutchins, PhD, (Co-PI) Texas State University, Edwards Aquifer Research and Data Center. Hutchins will participate in: water, microbial, and nutrient sampling, stable isotope data analysis, food web interpretation, and invertebrate collection and identification.
Hutchins has >14 years of experience working with karst aquifer invertebrates and biogeochemistry, and has extensive expertise in taxonomy and food webs in TX karst systems.

Victor Castillo, III, (Research Associate) Texas State University, Edwards Aquifer Research and Data Center. Castillo will participate in: water and nutrient sampling, invertebrate collection and identification, and data management.
Castillo has >20 years of experience with field and lab methods for sampling and analysis of water and invertebrates, and has sampled both in diverse aquifer systems across Texas.

Ashley Cottrell, (Lab Manager) Texas State University, Edwards Aquifer Research and Data Center. Cottrell will lead liquid water stable isotope, dissolved nutrient, and ion analyses. Cottrell will participate in: water and nutrient sampling, invertebrate collection and identification, and data management.
Cottrell has >3 years of experience working in and managing an analytical research lab, and is

experienced in geochemical analyses, water isotope analysis, nutrient analyses, and sample collection and data management.

Audrey Paterson, (Lab Manager) The University of Tennessee Knoxville, Department of Earth and Planetary Sciences. Paterson will participate in analysis of microbiological samples, and interpretation of resulting molecular data, report writing, and food web interpretation. Paterson has >5 years of experience with advanced methods for molecular analysis of microbes, and similar experience in analysis and interpretation of resulting sequence data.

Partnerships:

PIs at Texas State University (TX State) will partner and collaborate with PIs Engel and Paterson at The University of Tennessee at Knoxville (UTK).

TX State will be primarily responsible for all field sampling and invertebrate collecting, sample preparation, and geochemical, invertebrate, nutrient, and stable isotope data analyses. PIs at UTK will be subcontracted by TX State, and will be responsible for molecular sample analyses and subsequent molecular data analysis and interpretation. UTK portion of funding supports analytical costs and partial salary for one of the PIs (Paterson). Total funds to UTK: $22,140.

Direct Costs

Item	Cost ea	# (or sites)	total	Details
Salaries				
PhD Salary	$2,291.67	12	$27,500	One yr funding for Phd student who will be involved with the work
PhD fringe	$389.58	12	$4,675	One yr funding for fringe for PhD student (0.17)
MS summer salary	$1,400.00	3	$4,200	Three months summer salary ($1,400) for a MS student
MS summer fringe	$238.00	3	$714	Three months summer fringe ($1,400 x 1.18) for a MS student
Lab Manager Salary	$4,747.39	1	$4,747	One month salary for research associate- Victor Castillo
Lab Manager Fringe	$1,329.27	1	$1,329	One Month fringe for research associate - Victor Castillo
Total Salaries & Fringe			**$43,166**	
Supplies				
Sample shipping	$800.00	1	$800	Shipping samples to labs
Water ions and isotopes	$41.00	50	$2,050	Water geochemistry and stable isotopes
Dissolved C/N/P	$39.00	50	$1,950	Dissolved nutrient analyses
Total Supplies			**$4,800**	
Travel				
Travel for TSU	$0.58	4,000	$2,320	Travel to field sites [miles]
Total Travel			**$2,320**	
Professional Services				
Stable isotope analyses	$11.00	250	$2,750	Analysis of 13C and 15N of solids (tissues and microbial) at UC Davis lab
Stable isotope analyses	$19.00	250	$4,750	Analysis of 34S of solids (tissues and microbial) at UC Davis isotope lab
Total Professional Services			**$7,500**	
Subcontract				
Lab Manager salary (UTK)	$4,166.67	2	$8,333	Two months salary for research lab manager
Lab Manager fringe (UTK)	$1,458.00	2	$2,917	Two months fringe for research lab manager
Molecular Analyses (UTK)	$330.00	33	$10,890	Microbial samples from 33 groundwater sites
Total Subcontract			**$22,140**	
Total Direct Costs			**$79,926**	

Matching Funds

Item	Cost ea	#	total	Details
Waived IDC			$39,563	
equipment use	$3,000.00		$3,000	Use of pumps, nets, water quality sondes, and other sampling and measuring equipment required for field work.
			$42,563	

Budget Justification:

Total Direct Costs requested are **$79,926**. A detailed breakdown of these costs is as follows:

Salaries

Salary plus fringe is requested for one year, for one PhD student, who will be dedicated to working closely with the PIs for the duration of this project ($32,175). This student will be responsible for much of the sample processing and sorting, and will be involved in all aspects of sampling and field work. Salary is also requested for one M.S. student who will assist the PIs and PhD student with the project during the first summer of field and lab work ($4,914).

One month of salary is requested for the Research Associate (Victor Castillo) at Texas State University ($6,077). He will be responsible for assisting with field work, lab work to sort, preserve, and prepare invertebrate samples, and preparation of samples for C, N, and S stable isotope analyses.

Supplies

$4,000 is requested for analysis of liquid water stable isotopes, cations, anions, and dissolved and total nutrient concentrations (C, N, P) in 50 samples from various sites across the study area. All analyses will be performed in the lab of PIs Schwartz and Nowlin at Texas State University. $800 is requested for shipping and handling of samples to Tennessee and to analytical labs.

Travel

$2,320 are requested for travel to collect samples: 4,000 miles, @ the approved federal mileage rate of $0.58 per mile. At ~60 miles round-trip to Austin from San Marcos, plus side travel to sampling sites, this is approximately 40 trips to Austin. For much of the sampling period, 2-3 (or more) trips per week will be required to check sampling devices to minimize potential for salamander mortality.

Professional Services

$7,500 is requested for stable isotope analysis ($\delta^{13}C$, $\delta^{15}N$, and $\delta^{34}S$) of 250 samples of invertebrate tissue, and coarse and fine particulate material collected at a variety of sites. We plan to use the U.C. Davis Stable Isotope lab, where current pricing for $\delta^{13}C$ and $\delta^{15}N$ isotopes are $11 per sample, and $\delta^{34}S$ is $19 per sample.

Subcontract

Two months of salary is requested for the Lab Manager (Audrey Paterson) at the University of Tennessee ($11,250. – salary + fringe). She will be responsible for preparation and analysis of microbial samples collected for molecular analyses, and subsequent data preparation and analysis.

$10,890 is requested to pay for sequencing of 33 molecular samples from various sites across the study area. Cost for analysis plus consumables per sample is $330.

Matching funds: In-kind matching funds by Texas State University are $42,563 and are as follows:

$39,563 in waived Indirect Costs are considered matching funds by Texas State University, using the standard IDC rate of 49.5% of Direct Costs.

An estimated $3,000 of matching in-kind use, calibration, and maintenance of field and lab equipment (pumps, water quality sondes, sampling supplies and equipment, etc.) owned by PIs Schwartz and Nowlin will be used to support successful completion of the project.

BUDGET JUSTIFICATION – Engel (University of Tennessee-Knoxville)

Senior Personnel

Salary is not requested for Engel in each project year. She will coordinate with Schwartz and others for field sampling, oversee the microbial characterization and genetics research, and analyze aqueous geochemistry samples for organic matter. She will supervise, train, and mentor a students who may assist in the research effort for their thesis work. She will also supervise the lab/data manager in the tasks of sample processing, analysis, and data management. She will assist Schwartz and others with data analysis and report writing, and initiate and contribute to publication efforts

Name	Base Annual Salary	Appt. Type	Person Months Y1	Person Months Y2	Total
Dr. Annette Engel, PI	$118,788	9	0.0	0.0	$0

Other Personnel

- **Other Personnel:** Two months of salary are requested for the partial support of a Laboratory Manager is requested for the first project year, as detailed below. The lab manager will be responsible for sample processing, sample archival, and analysis, possible student training, and data management in both project years.

Name	Base Annual Salary*	Appt. Type	Person Months Y1	Person Months Y2	Total
Laboratory Manager	$50,000	12	2	0	$8,333
				TOTAL – Other Personnel	$8,333

Fringe Benefits

Benefits for other personnel are calculated at 35% for other personnel.

Other Direct Costs

Materials and Supplies: For project year 1 only, $2,970 is requested for materials and supplies associated with water sampling for microbiology, including sterile filters, reagents, preservatives, disposable glassware and plastics, DNA extraction kits and reagents, nucleic acid purification, sequencing primers and kits, and electrophoresis.

Other: *Analyses:* $10,890 is requested for 16S rRNA gene sequencing for bacteria and archaea, and for metagenome sequencing, plus controls and replicates to verify contamination-free materials or resequencing of some samples.

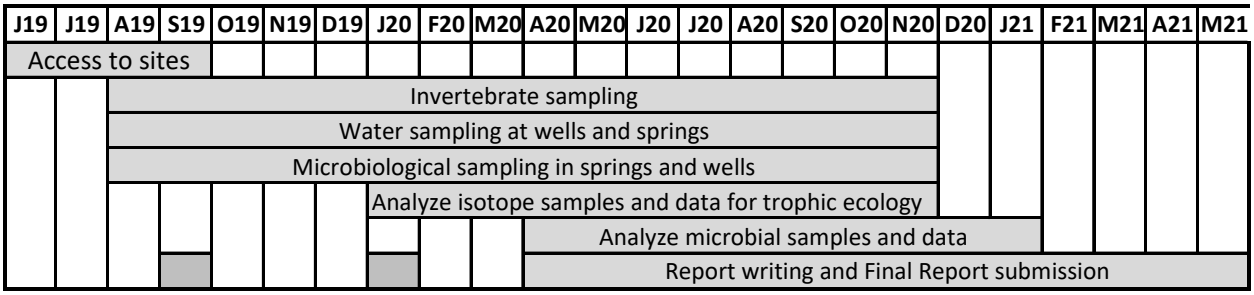
Indirect Costs

No F&A is requested.

Project Schedule:

Planned timeline for execution and completion of major project goals is outlined below.

Task	Duration
Locate and arrange access to sites (springs, wells, and recharge features)	June 2019 - Sept 2019
Sampling invertebrates for biodiversity and isotopic studies	April 2019 - Nov 2020
Water sampling at all sites for geochem and stable isotopes of C and N	April 2019 - Nov 2020
Sample and analyze microbial diversity in springs and wells	April 2019 - Nov 2020
Isotope data analysis and Baysian modeling for trophic ecology	Jan 2020 - Nov 2020
Data analysis and characterization of microbial diversity and function	April 2020 - Jan 2021
Report writing and Final Report submission	April 2020 - May 2021



City of Austin Purchasing Office

Certificate of Exemption for Professional Services, Public Health and Safety or Other Exempt Purchase (Non-Competitive)

DATE: 6/25/2019

TO: Purchasing Officer or Designee

PURCHASING POC: Paul Trimble

DEPT: Watershed Protection

FROM: Josie Archer, on behalf of Nathan Bendik

PHONE: 4-9735

Chapter 252 of the Local Government Code requires that municipalities comply with the procedures established for competitive sealed bids or proposals before entering into a contract requiring an expenditure unless the expenditure falls within an exemption listed in Section 252.022.

Refer to Local Government Code 252.022 for a complete list of exemptions:
Link to Local Government Code

The City has selected a vendor for contract award and declares the competitive solicitation procedures in Local Government Code Chapter 252.022 to be exempt for this procurement. This Certificate of Exemption is hereby executed and filed with the Purchasing Office as follows:

1. The undersigned is authorized and certifies that the following exemption is applicable to this procurement.

Please check the criteria listed below that applies to this request:

- ☐ A procurement made because of a public calamity that requires the immediate appropriation of money to relieve the necessity of the municipality's residents or to preserve the property of a municipality.
- ☐ A procurement necessary to preserve or protect the public health or safety of the municipality's residents.
- ☐ A procurement necessary because of unforeseen damage to public machinery, equipment, or other property.
- ☑ A procurement of personal, professional, or planning services
- ☐ Other exemption from Chapter 252.022: _____

2. Describe this procurement

- What it is for and why it is needed?
  This is for a professional services contract with Texas State University for research related to food webs and trophic structure of the groundwater ecosystem supporting Barton Springs and Austin Blind Salamanders. The project was proposed to the Barton Springs Salamander Conservation Fund (BSSCF) and the proposal was accepted by a committee of Watershed Protection Dept. staff and the U.S. Fish and Wildlife Service (USFWS). The fund was established in accordance with the provisions set forth in the Barton Springs Pool Habitat Conservation Plan (HCP) and incidental take permit (ITP) TE-839031-2, issued under the authority of 16 USC 1539(a)(I)(B) and regulation 50 CFR §§ 13 & 17.
  - The BSSCF was established as a conservation measure in the City of Austin's HCP and associated ITP from the USFWS that allows for the operation and management of Barton Springs Pool as a recreational facility. The objective of the BSSCF is to support educational, scientific, or management projects that promote the conservation of endangered Barton Springs and Austin Blind salamanders, and the groundwater ecosystem where they exist. Each year, a portion of the proceeds from entrance fees to Barton Springs Pool is allocated to the BSSCF.
  - In accordance with the HCP and ITP, the use of this fund is restricted to the study of salamander biology, captive breeding, refugium development, reintroduction, watershed related research, improved cleaning techniques for natural water bodies, education and/or land acquisition. The attached proposal addresses this requirement.
  - By definition, the proposal is unique to the proposer and was accepted by the committee based on the unique qualifications of the project team, the applicability of the proposal to meet the requirements of the fund, and technical merit.
- Describe the following (as applicable):

For Professional, Personal, or Planning Service Exemptions:

- Why is the vendor the most qualified to provide the services?

Texas State University is exceptionally qualified to perform a comprehensive investigation of aquifer ecology and ecosystem function in the Barton Springs Edwards Aquifer. Their laboratory and expertise are uniquely suited to address the professional services required.

- Does this vendor have a history of working with the City? If so, was it on this particular service?

Yes, but not on this particular service. We previously worked with Texas State University for a fresh water mussel study from 2012-2015.

- Will this procurement be component of a larger service or phases of service?

No, the whole research project will be conducted over the course of two years. $39,963 was budgeted in FY 19 and again in FY 20.

- Is the vendor a City of Austin local vendor?

They are not a local vendor but they are registered with the City.

- Does the vendor hold an M/WBE certification with the City, a HUB certification with the State of Texas, or any other minority or women owned certifications?

No.

- What qualifications, certifications, or specialized training does the vendor have?

They have gathered a team of experts from Texas State University and the University of Tennessee. The principal investigators hold Ph.D.'s in their respective fields and hold faculty positions at their respective Universities. These experts have been working on similar questions in a similar environment (the San Antonio segment of the Edwards Aquifer) and have published high-quality studies similar to the one we are contracting them to do in the Barton Springs segment of the Edwards Aquifer. For example, refer to the following works:

Gray C, & AS Engel. 2013. Microbial diversity and impact on carbonate geochemistry across a changing geochemical gradient. *ISME Journal* 7: 325-337.
Hutchins, BT, AS Engel, WH Nowlin, & BF Schwartz. 2016. Chemolithoautotrophy supports subterranean food webs and affects diversity and stability in groundwater communities. *Ecology* 97:1530-1542.

- What is the impact if a contract is not secured with this particular vendor (loss of project timeline, loss of funding etc.)?

The project will not be able to be completed. The project fulfills a requirement of the City's federal Fish and Wildlife permit that is required to keep Barton Springs Pool open. The City has agreed, in coordination with the federal government, to fund scientific projects from the Barton Springs Salamander Conservation Fund.

- What other vendors can provide these services and why are they not the best fit for the contract?

The US Geological Survey is the only other vendor that comes to mind that can accomplish some of the chemical analyses, but the experts we coordinated with at the USGS do not have the particular expertise required to perform the entire project, as proposed. For example, the sampling involved requires detailed knowledge and experience with sytgobitic invertebrate and microbial collection from difficult-to-access places (the aquifer) and knowledge of how to identify these organisms. There are only a handful of people in the world that know enough about this ecosystem and these organisms that would be able to accomplish this. This is highly specialized work. Additionally, contracting through a federal agency, if they were able to perform the work, would be 2 to 3 times more expensive (based on experience with other scientific contracts we have with USGS, for example).

- **Prices were determined to be reasonable based on the following (select all that apply):**
  - ☐ Prices are established under a current Cooperative contract.
    Notes: At a minimum, note the contract number, contract title, cooperative entity, and government or entity who created the contract.
  - ☐ Prices are the same or similar to current City contract.
    Notes: At a minimum, note the City of Austin contract number and title.
  - ☐ Prices are the same or similar to current contract with another government.
    Notes: At a minimum, note the contract number, title and government that created the contract.

☐ Prices are on a current and publicly available list price, for the same or similar products, available to all government and commercial customers.
Notes: At a minimum, note the list price title, source of the list price (catalog and catalog publish date or web address and download date).

☐ Prices are established by law or regulation.
Notes: At a minimum, note the legal or regulatory reference that established the prices.

☒ Other means of determining Price Reasonableness.

Price is reasonable because it includes in-kind matching of salary for PIs and use of expensive scientific equipment:
In-kind matching funds by Texas State University are $42,563 and are as follows:

$39,563 in waived Indirect Costs are considered matching funds by Texas State University, using the standard IDC rate of 49.5% of Direct Costs.

An estimated $3,000 of matching in-kind use, calibration, and maintenance of field and lab equipment (pumps, water quality sondes, sampling supplies and equipment, etc.) owned by PIs Schwartz and Nowlin will be used to support successful completion of the project.

3. Forward the completed and signed Certificate of Exemption to the Purchasing Office along with the following documentation:
   - ☑ Scope of Work or Statement of Work (if applicable)
   - ☑ Vendor's proposal/quote (if applicable)
   - ☐ Project timeline with associated tasks, schedule of deliverables or milestones, and proposed payment schedule
   - ☐ Professional resumes, certifications, and/or licenses (Professional, Personal or Planning Services Only)
   - ☐ Other supporting documentation

4. Because of the above facts and supporting documentation, the City of Austin exempts this procurement from Local Government Code Chapter 252 and intends to contract with:

   (Vendor Name): Texas State University for

   (Description of Procurement): Food Webs and Trophic Structure of the Groundwater Ecosystem Supporting Barton Springs and Austin Blind Salamanders research project.

5. Check the contract type (one-time or multi-term) and fill in the dollar amount and term as applicable:
   ☐This is a one-time request for $_____

   ☑This is a multi-term contract request for 12 months (# months for base term) in the amount of $39,963.00 budgeted in FY 19 with 1 x 12 month (# of renewal options) for $39,963.00 budgeted in FY 20.

Recommended Certification	Originator	6/25/19 Date
Approved Certification	Department Director or designee	6/26/19 Date
	Assistant City Manager / General Manager or designee (procurement requiring Council approval)	Date
Purchasing Office Review	Authorized Purchasing Office Staff	7-12-19 Date
Purchasing Office Management Review (If required due to signature authority level)	Purchasing Officer or designee	Date